# The Nostratic Hypothesis
# And Nostratic Kinship Terminology

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## 1.0. Background

The Nostratic Hypothesis got its start in 1903 with a suggestion by the Danish Indo-Europeanist Holger Pedersen that a number of languages/language families of northern Eurasia and the ancient Near East might be genetically related to Proto-Indo-European. He coined the term "Nostratic" to refer to this proposed grouping of languages. Early work was done by a small number of scholars on the question of distant linguistic relationship, but most of that work was of poor quality and was ignored by mainstream scholars. It was not until the mid-1960s that the Russian linguists Vladimir M. Illič-Svityč and Aharon Dolgopolsky began to make meaningful progress in reconstructing the Nostratic parent language. Subsequently, a number of other scholars in other countries began making important contributions as well — these include: Václav Blažek, Allan R. Bomhard, Joseph H. Greenberg, Alexis Manaster Ramer, and Vitaly Shevoroshkin, among others. Two schools have come into being, namely, the Moscow School, whose chief spokesman is Aharon Dolgopolsky, and the American School, whose chief spokesman is Allan R. Bomhard. Serious work continues unabated.

## 2.0. Evidence for Nostratic

The following evidence provides the basis for setting up a Nostratic macrofamily:

1. First and foremost, the descendant languages can be shown to share a large common vocabulary. In an article published in 1965, Illič-Svityč listed 607 possible common Nostratic roots, but only 378 have been published to date in his posthumous comparative Nostratic dictionary. Dolgopolsky currently has gathered material to support well over 2,000 common Nostratic roots, but only a small sampling of this material has been published to date. In the joint monograph (1994) by Allan R. Bomhard and John C. Kerns, entitled *The Nostratic Macrofamily: A Study in Distant Linguistic Relationship*, 601 common Nostratic roots were listed, and another 50 were proposed in a later article by Bomhard. The late Joseph H. Greenberg has recently published volume 2 (2002) of his book *Indo-European and Its Closest Relatives: The Eurasiatic Language Family*, in which a large amount of lexical material is discussed (Eurasiatic may be viewed as a branch of Nostratic). Finally, Bomhard is preparing a new book in which over 800 Nostratic roots are reconstructed.
2. As is to be expected, the various branches of Nostratic investigated to date exhibit regular sound correspondences (see the Appendix at the end of this paper for details), though, it should be mentioned, there are differences in interpretation between Illič-Svityč and Dolgopolsky on the one hand and Bomhard on the other.

3.  Finally, a substantial number of common grammatical formants have now been recovered —
    many of these are listed in Illič-Svityč's comparative Nostratic dictionary; see also the
    chapter on Nostratic morphology by John C. Kerns in Bomhard—Kerns (1994:141—190),
    volume 1 of Greenberg's *Indo-European and Its Closest Relatives: The Eurasiatic Language
    Family* (Greenberg 2000), and Bomhard (forthcoming).

    Notable among the lexical items uncovered by Illič-Svityč, Dolgopolsky, Greenberg, and
Bomhard is a solid core of common pronominal stems.  These pronominal stems have particular
importance, since, as forcefully demonstrated by John C. Kerns (1985:9—50), pronouns, being
among the most stable elements of a language, are a particularly strong indicator of genetic
relationship (Ruhlen 1994:92—93 makes the same point).
    The conclusion seems inescapable that the consistent, regular phonological
correspondences that can be shown to exist among the Nostratic daughter languages as well as
the agreements in vocabulary and grammatical formants that have been uncovered to date cannot
be explained as due to linguistic borrowing or mere chance but can only be accounted for in
terms of common origin, that is, genetic relationship.  To assume any other possibility would be
tantamount to denying the efficacy of the Comparative Method.  This does not mean that all
problems have been solved.  On the contrary, there remain many issues to be investigated and
many details to be worked out, but the future looks extremely exciting and extremely promising.


### 3.0.  A Sketch of Proto-Nostratic Phonology

    Proto-Nostratic had a rich system of stops and affricates.  Each stop and affricate series
was characterized by the three-way contrast (1) voiceless (aspirated), (2) voiced, and (3)
glottalized.  The aspiration of series (1) was phonemically non-distinctive.
    The Proto-Nostratic phonological system may tentatively be reconstructed as follows:

Stops and Affricates:

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| $p^h$ | $t^h$ | $c^h$ | $č^h$ | $t^{yh}$ | $t\textsubscript{ƚ}^h$ | $k^h$ | $k^{wh}$ | $q^h$ | | |
| b | d | ʒ | ž | $d^y$ | $d\underline{ʐ}$ (?) | g | $g^w$ | ɢ | | |
| p' | t' | c' | č' | $t'^y$ | $t\underline{ƚ}'$ | k' | $k'^w$ | q' | $q'^w$ | ʔ |

Fricatives:

| | | | | | |
|---|---|---|---|---|---|
| s | š | $s^y$ | | h | ħ |
| z | ž (?) | $z^y$ (?) | | | ʕ |

Glides:

| | |
|---|---|
| w | y |

Nasals and Liquids:

|     |     |          |     |
| --- | --- | -------- | --- |
| m   | n   | n$^y$    | ŋ   |
|     | l   | l$^y$    |     |
|     | r   | r$^y$    |     |

Vowels:  i (~ e)          u (~ o)
                  e          o
                  (ə ~) a

Also the sequences:  iy (~ ey)   uy (~ oy)   ey   oy   (əy ~) ay
                          iw (~ ew)   uw (~ ow)   ew   ow   (əw ~) aw

## 3.1. Remarks on the Vowels

The following vowels may be reconstructed for Proto-Nostratic:  *a, *e, *i, *o, and *u. At least some of these vowels must have been subject to considerable subphonemic variation in the Nostratic parent language.  The high front and back vowels *i and *u, in particular, may be assumed to have had lowered variants (indicated in the Proto-Nostratic reconstructions as *e and *o respectively), while the central low vowel *a may be assumed to have had higher variants (indicated in the Proto-Nostratic reconstructions as *ə).  To complicate matters, *e and *o must also have existed as independent vocalic elements.  It was the reanalysis, phonemicization, and exploitation of this subphonemic variation that gave rise to the ablaut and vowel harmony patterning found in the majority of the Nostratic daughter languages.  It may be noted here that, according to Greenberg (1990), traces of an earlier system of vowel harmony can be discerned in Proto-Indo-European.

It is unclear whether phonemic long vowels existed in Proto-Nostratic as well, though the evidence seems to indicate that they did not.

Finally, it may be noted that, while any vowel (*a, *e, *i, *o, *u) could appear in initial syllables, only *a, *i, *u could appear in non-initial syllables.  This is identical to the patterning found in Dravidian.

## 4.0. Root Structure Patterning in Proto-Nostratic

Comparison of the various Nostratic daughter languages makes it possible to determine the rules governing the structural patterning of roots and stems in Proto-Nostratic.  Most likely, the earliest patterning was as follows:

1. There were no initial vowels in Proto-Nostratic.  Therefore, every root began with a consonant.
2. Originally, there were no initial consonant clusters either.  Consequently, every root began with one and only one consonant.  Medial clusters were permitted, however.
3. Two basic root types existed:  (A) *CV and (B) *CVC, where C = any non-syllabic, and V = any vowel.  Permissible root forms coincided exactly with these two syllable types.

4. A stem could either be identical with a root or it could consist of a root plus a single derivational morpheme added as a suffix to the root: *CVC+CV-. Any consonant could serve as a suffix.
5. A stem could thus assume any one of the following shapes: (A) *CV-, (B) *CVC-, (C) *CVC+CV-, or (D) *CVC-CVC-. As in Proto-Altaic, the undifferentiated stems were real forms in themselves and could be used without additional suffixes or grammatical endings. However, when so used, a vowel had to be added to the stem (unless the stem already ended in a vowel or in a semivowel, nasal, or liquid), thus: (A) *CV- > *CV (no change), (B) *CVC- > *CVC+**V**, (C) *CVC-CV- > (no change), or (D) *CVC-CVC- > *CVC-CVC+**V**. Following Afrasian terminology, this vowel may be called a "terminal vowel" (TV). Not only did terminal vowels exist in Proto-Afrasian, they were also found in Dravidian, where they are called "enunciative vowels". As in Proto-Dravidian, the terminal vowel was only required in stems ending in obstruents, which could not occur in final position.

The original root structure patterning was maintained longer in Proto-Dravidian and Proto-Altaic than in the other branches, while the patterning found Proto-Indo-European, Proto-Kartvelian, and Proto-Afrasian is based upon slightly later developments. The root structure constraints found in Proto-Indo-European were an innovation. In Proto-Uralic, the rule requiring that all words end in a vowel was an innovation and arose from the incorporation of the so-called "terminal vowel" into the stem. It should be mentioned that reduplication was a widespread phenomenon.

On the basis of the evidence of Proto-Indo-European, Proto-Kartvelian, Proto-Afrasian, Proto-Dravidian, and Proto-Altaic, it may be assumed that there were three fundamental stem types: (A) verbal stems, (B) nominal and adjectival stems, and (C) pronominal and indeclinable stems. Some stems were exclusively nominal. In the majority of cases, however, both verbal stems and nominal stems could be built from the same root. In Proto-Nostratic, only pronominal and indeclinable stems could end in a vowel. Verbal and nominal stems, on the other hand, had to end in a consonant, though, as noted above, when the undifferentiated stems were used as real words in themselves, a "terminal vowel" had to be added to the stem (but only when the stem ended in an obstruent). The terminal vowels were morphologically significant. Adjectives did not exist as an independent grammatical category in Proto-Nostratic.

During the earliest period of Proto-Nostratic, *roots* could only have the forms: (a) *CV- and (b) *CVC-. Type (a) was restricted to pronominal stems and indeclinables, while type (b) characterized nominal and verbal stems. A single *derivational formative* could be placed after root type (b): *CVC + CV (derivational formative). Grammatical relationships were indicated by placing *particles* either after the undifferentiated stem or after the stem plus a derivational formative: (a) *CVC + CV (particle [P]) or (b) *CVC + CV (derivational formative [DF]) + CV (particle [P]). In this scheme, a morphologically significant *formative vowel* (FV) had to be added either directly after the root if it ended in a consonant or between the root and any following element, be it particle or derivational formative; thus, we get the following patterns:

(a) *CVC + V$_{FV}$      (plus particle: *CVC + V$_{FV}$ + CV$_P$)
(b) *CVC + V$_{FV}$ + CV$_{DF}$      (plus particle: *CVC + V$_{FV}$ + CV$_{DF}$ + CV$_P$)
(c) *CVC-CVC + V$_{FV}$      (plus particle: *CVC-CVC + V$_{FV}$ + CV$_P$)

Eventually, the vowel of the derivational formative after the stem plus formative vowel was lost in type (b) when a particle was added, as follows: $*CVC + V_{FV} + C_{DF} + CV_P$. This is essentially the stage represented in Proto-Dravidian, though Proto-Dravidian has added long vowels to the equation as well as stems beginning with a vowel (no doubt arising from the loss of initial laryngeals). Next, the formative vowel was reinterpreted as part of the derivational formative in type (b): $*CVC + VC + CV$. This is the stage represented by Proto-Afrasian and is the basis for the root structure patterning found in Proto-Kartvelian and Proto-Indo-European as well. From an Afrasian perspective, there is no such thing as "formative vowels" — they are only preserved in Dravidian and Elamite, though, in Elamite, their status is disputed.

## 5.0. Proto-Nostratic Morphology

The assumptions we make about the morphological and syntactical structure of a given proto-language profoundly affect the reconstructions that we propose. In what follows, I will be proposing that Proto-Nostratic was an active language. Now, active languages exhibit specific characteristics that set them apart from other morphological types. Therefore, it follows that the reconstructions I posit will conform with an active structure. However, I believe quite emphatically that reconstructions must never be driven by theory alone. Rather, they must be fully consistent with the supporting data. Moreover, not only must our reconstructions be consistent with the supporting data, they must be consistent from a typological perspective as well, and they must be able to account for later developments in the descendant languages in as straightforward a manner as possible, without recourse to ad hoc rules. When reconstructions are driven by theory alone, the results can be disastrous.

Several scholars have recently presented persuasive arguments in favor of reconstructing an early phase of Proto-Indo-European as an active language. Proto-Afrasian is also assumed to have been an active language. In active languages, subjects of both transitive and intransitive verbs, when they are agents semantically, are treated identically for grammatical purposes, while non-agent subjects and direct objects are treated differently. An "agent" may be defined as the entity responsible for a particular action or the entity perceived to be the cause of an action.

Above, we mentioned that Proto-Nostratic had *formative vowels*. Now, it is curious that the formative vowel can take different shapes in Proto-Dravidian: *a*, *i*, or *u*. This seems to indicate that the different formative vowels must have had some sort of morphological significance at one point in time, even though this distinction has been lost in Dravidian. Not only must the formative vowels have had morphological significance, it is even probable that they had different significance depending upon whether a nominal or verbal stem was involved.

For verbal stems, the formative vowels may have been aspect markers. The patterning may have been as follows: *a* marked imperfective, *i* marked perfective, and *u* marked subordinate.

For nominal stems, the situation is a bit more complicated. I assume that the following patterning existed in early Proto-Nostratic: *-i*/*-u* was used to mark the subject in active constructions, while *-a* was used to mark the direct object in active constructions as well as the subject in stative constructions. *-a* was also used to mark the so-called "*status indeterminatus*".

In later Proto-Nostratic, this patterning became disrupted, though it may have survived into Proto-Afrasian. In later Proto-Nostratic, the relational markers *-ma and *-na came to be used to mark the direct object in active constructions as well as the subject in stative constructions. Eventually, these relational markers became the primary means of marking the direct object in active constructions or the subject in stative constructions, with the result that the older patterning became disrupted. Thus, in the latest stage of the Nostratic parent language, we find the following patterning:

1.      *-i/*-u:  used to mark the subject in active constructions:

   (a)  *CVC + i/u
   (b)  *CVC + i/u + CV$_{DF}$
   (c)  *CVC-CVC + i/u

2.      *-a ~ *-ma/*-na:  used to mark the direct object in active constructions as well as the subject in stative constructions:

   (a)  *CVC + a            plus *-ma/*-na: *CVC + a + ma/na
   (b)  *CVC + a + CV$_{DF}$      plus *-ma/*-na: *CVC + a + C(V)$_{DF}$ + ma/na
   (c)  *CVC-CVC + a         plus *-ma/*-na: *CVC-CVC + a + ma/na

*-ma/*-na was the first case form (bound relational marker) to develop in Proto-Nostratic. The second was the genitive (in the sense 'belonging to') in *-nu. Indeed, these are the only two bound relational markers that can be confidently reconstructed for the latest period of Proto-Nostratic. Finally, it seems likely that unextended *-a remained as the indicator of the *status indeterminatus*.

   Proto-Nostratic syntax was head-final, or left-branching, that is, dependents preceded their heads according to the so-called "rectum-regens rule". In other words, "adverbs" preceded verbs, "adjectives" preceded nouns, and auxiliaries followed the main verb, though it must be emphasized here that adjectives did not exist as an independent grammatical category in Proto-Nostratic. The unmarked syntactical order was Subject + Object + Verb (SOV).


## 6.0.  Pronominal, Deictic, and Anaphoric Stems

## 6.1.  First Person Stems

   First person singular (active):  *mi
   First person plural (inclusive, active):  *ma
   First person (stative):  *kʰa
   First person (stative):  *Ha
   First person singular:  *na
   First person plural (exclusive, active):  *na
   First person (postnominal possessive/preverbal agentive):  *ʔiya

### 6.2. Second Person Stems

Second person (active):  *$t^hi$ (~ * $t^ha$)
Second person:  *$si$
Second person:  *$ni$

### 6.3. Anaphoric and Deictic Stems

Pronominal base of unclear deictic function:  *-$gi$/*-$ge$
Deictic particle:  (A) *$ʔa$-/*$ʔə$- (distant), (B) *$ʔi$-/*$ʔe$- (proximate), and (C) *$ʔu$-/*$ʔo$- (intermediate)
Deictic particle:  (A) *$k^ha$-/*$k^hə$- (proximate), (B) *$k^hu$-/*$k^ho$- (distant), and (C) *$k^hi$-/*$k^he$- (intermediate)
Deictic particle:  (A) *$t^ha$-/*$t^hə$- (proximate), (B) *$t^hu$-/*$t^ho$- (distant), and (C) *$t^hi$-/*$t^he$- (intermediate)
Deictic particle:  *$ša$-/*$šə$-
Anaphoric pronoun stem:  *$si$-/*$se$-
Anaphoric pronoun stem:  *$na$-, *$ni$-
Deictic particle:  *$t^ʸha$- 'that over there, that yonder (not very far)'

### 6.4. Interrogative, Relative, and Indefinite Stems

Relative:  *$k^{wh}i$-/*$k^{wh}e$-; interrogative:  *$k^{wh}a$-/*$k^{wh}ə$-
Interrogative-relative stem:  *$ʔay$-, *$ʔya$-
Interrogative:  *$mi$-; relative:  *$ma$-
Interrogative-relative:  *$na$
Indefinite:  *$ma$-, *$mi$-, *$mu$-
Indefinite:  *$d^ʸi$-/*$d^ʸe$- 'this one, that one'

### 7.0. Nominal Morphology

The overall structure of nominals (nouns and adjectives) was as follows:

Root + formative vowel (+ derivational suffix)
(+ relational marker) (+ number marker)

A stem could consist of the unextended root or the root extended by a single derivational suffix (preceded, as indicated above, by a formative vowel).  As has already been noted, it is necessary to recognize two distinct periods of development in Proto-Nostratic.  In the earliest phase of development, the relational markers listed below were free relational morphemes (postpositional particles).  In later Proto-Nostratic, however, at least two of them were well on their way to becoming bound relational morphemes (case suffixes).

As already noted, only the following two bound relational markers (case suffixes) can be confidently reconstructed for the latest period of Proto-Nostratic:  (a) direct object *-ma, *-na and (b) genitive *-nu.  Other case relationships were expressed by postpositions (see below for a list), some of which developed into bound case morphemes in the individual daughter languages. This is confirmed by Dravidian, where only the accusative (*-ay, *-Vn), dative (*-kk-/*-k-), and genitive (*-a, *-in) can be confidently reconstructed for the Dravidian parent language.  Other case forms developed within the Dravidian daughter languages.  Likewise, only the following two grammatical cases can be reconstructed for Proto-Uralic:  (a) accusative *-m, which probably was used to mark the definite direct object of finite verbs, and (b) a subordinate suffix *-n, which functioned as a genitive/nominalizer with nouns and as an adverb formant with verbs. There were also at least three local cases in Proto-Uralic:  (a) locative *-nA, (b) separative *-tA ~ *-tI, and (c) and perhaps the latives *-k (and/or *-ŋ) and *-tʸ (traditional *-ć) (and/or *-nʸ [traditional *-ń]).  Denis Sinor (1988:714—725) has devoted an important study to the question of common case markers between Uralic and Altaic.  He, too, posits a Proto-Uralic accusative in *-m and a genitive in *-n.  For the former, he notes that nothing comparable can be posited for Proto-Turkic or Proto-Mongolian, but he does reconstruct a Proto-Tungus accusative *-m, which is in agreement with what is found in Uralic.  The clearest parallels for the latter are to be found in the Proto-Mongolian genitive *-n and in the Proto-Turkic genitive *-n.  The genitive and accusative have converged in some Mongolian languages.  This seems to indicate that Proto-Mongolian may have preserved the *-n variant accusative form as opposed to the *-m variant found in Uralic and Tungus.  Sinor (1988:715—725) also discusses the Uralic and Altaic parallels between various local cases.  Finally, it is worth mentioning here that, within Afrasian, Zaborski (1990:628) tentatively reconstructs the following case morphemes for Proto-Omotic: (a) nominative *-i, (b) genitive-instrumental-directional *-kV, (c) dative *-s, (d) dative-comitative *-rV, (e) accusative *-a and *-nV, (f) instrumental-locative-directional-dative *-nV, and (g) ablative *-pV.  Zaborski (1990:618) notes that some of these case forms may go back to earlier postpositions.  Parallels with Cushitic show that at least some of these case forms go back to Proto-Afrasian.  Diakonoff (1988:61) notes that the following cases can be established for Proto-Afrasian with reasonable certainty:  (a) *-Vš, *-šV locative-terminative; (b) *-dV, *-Vd comitative, dative; (c) *-kV ablative and comparative; (d) *-Vm locative-adverbialis; (e) *-l directive; and (f) *-p (also *-f) ablative (in Omotic); conjunction, demonstrative pronoun in other languages.  The ultimate Nostratic origin of several of the case forms posited by Zaborski for Proto-Omotic and by Diakonoff for Proto-Afrasian is completely transparent.

In Proto-Nostratic, adjectives did not exist as a separate grammatical category.  They were differentiated from nouns mainly by syntactical means — "adjectives" preceded the nouns they modified.  Moreover, they did not agree with the head noun in number or gender.

## 7.1.  Relational Markers

Direct object:  *-ma
Direct object:  *-na
Possessive:  *-nu 'belonging to'
Possessive:  *-lV 'belonging to'
Dative:  *-na 'to, for'

Directive:  *-$k^ha$ 'direction to or towards, motion to or towards'
Directive(-locative):  *-$ri$ 'direction to or towards, motion to or towards (?)'
Locative:  *-$ni$ 'the place in, on, or at which something exists or occurs'
Locative, instrumental-comitative:  *-$ma$ 'in, from, with'
Locative:  *-$bi$ 'in addition to, together with'
Locative:  *-$i$ 'near to, near by (?)'
Comitative-locative:  *-$da$ 'together with'
Oblique:  *-$t^ha$

## 7.2.  Dual and Plural Markers

Dual:  *$k^hi(-n)$
Plural:  *-$t^ha$
Plural:  *-$ri$
Plural:  *-$k^hu$
Plural (Eurasiatic only):  *-$sV$
Plural/collective:  *-$la$
Plural:  *-$nV$

Note:  plurality could also be expressed by reduplication of the root.

## 7.3.  Derivational Suffixes

Nominalizer:  *-$ri$/*-$re$ (~ *-$r$-)
Nominalizer:  *-$ma$ (~ *-$m$-)
Nominalizer:  *-$ya$ (~ *-$y$-)
Nominalizer:  *-$t^ha$ (~ *-$t^h$-)
Nominalizer:  *-$na$ (~ *-$n$-)
Nominalizer:  *-$la$ (~ *-$l$-)
Nominalizer:  *-$k^ha$ (~ *-$k^h$-)
Nominalizer:  *-$k'a$ (~ *-$k'$-)

## 8.0.  Verbal Morphology

In Proto-Nostratic, verbs fell into two types of construction:  (1) active and (2) stative.  In active constructions, which usually involved transitive verbs, the grammatical subject of the verb represented the agent performing the action, and the direct object represented the patient, or recipient, of the action.  Stative constructions, on the other hand, expressed a state of affairs, rather than an event.  Verbs expressed aspectual contrasts rather than temporal contrasts.  Tense relates the time of the situation referred to to some other time, usually to the moment of speaking, while aspect marks the duration or type of temporal activity denoted by the verb.  Proto-Nostratic had two aspects:  (a) perfective (past) and (b) imperfective (non-past).  Proto-Nostratic also had, at the very least, the following moods:  (a) indicative; (b) imperative; (c)

conditional; (d) hortatory-precative; (e) inchoative; and (f) prohibitive.  There was also a causative construction.

The overall structure of verbs was as follows:

Root + formative vowel (+ derivational suffix)
(+ mood marker) (+ person marker) (+ number marker)

A stem could consist of the unextended root or the root extended by a single derivational suffix (preceded, as indicated above, by a formative vowel).  The position of the number marker seems to have been flexible — it could also be placed before the person marker.  Gender was not marked.  There were no prefixes in Proto-Nostratic.  We may note here that Krishnamurti (2003:279 and 312) posits the following structure for verbs in Proto-Dravidian:

Stem + tense-mood + (gender-)number-person marker

Stative verbs were indifferent to number and, therefore, had no plural forms.  They also had a special set of person markers different from those of active verbs:

|  | Active person markers | | Stative person markers |
|---|---|---|---|
|  | Singular | Plural |  |
| 1p. | *mi | *ma (inclusive) (+ plural marker) | *kʰa |
|  | *na | *na (exclusive) (+ plural marker) | *Ha |
| 2p. | *tʰi | *tʰi (+ plural marker) | *tʰi |
|  | *si |  |  |
|  | *ni |  |  |
| 3p. | *ša-/*šə- | *ša-/*šə- (+ plural marker) | *Ø |
|  | *na-, *ni- | *na-, *ni- (+ plural marker) |  |

Morphologically, verbs could be either finite or non-finite.  Finite forms could be marked for aspect, mood, person, and number, but not for gender or tense.  Non-finite forms exhibited nominal inflection.  In unmarked word order, the verb occupied the end position of a clause.

## 8.1.  Non-finite Verb Forms (Derivational Suffixes)

The following non-finite verb forms are widespread enough in the Nostratic daughter languages to guarantee their common origin, and, consequently, they are listed separately here.  However, at the Proto-Nostratic level, they were indistinguishable from the nominalizing suffixes listed above.

Participle: *-na
Participle: *-tʰa

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Gerundive-participle: *-la*

## 8.2. Finite Verb Forms: Mood Markers

Imperative: *-kʰa, *-kʰi, *-kʰu (~ *-kʰ-)
Conditional: *-ba (~ *-b-)
Hortatory-precative: *-li (~ *-l-)
Inchoative: *-na (~ *-n-)

Note: the bare stem could also serve as imperative.

## 8.3. Finite Verb Forms: Others

Causative: *-sV (~ *-s-)

## 9.0. Prohibitive/Negative Particles and Indeclinables

The following negative/prohibitive particles and indeclinables can be reconstructed for Proto-Nostratic:

Negative particles: *na, *ni, *nu
Prohibitive particle: *ma(ʔ)
Negative particle: *ʔal- (~ *ʔəl-)
Negative particle: *li (~ *le) (?)
Negative particle: *ʔe
Post-positional intensifying and conjoining particle: *kʷʰa- (~ *kʷʰə-)
Particle: *kʷʰay- 'when, as, though, also'
Particle: *ħarʸ- 'or; with, and; then, therefore'
Particle: *ʔin- (~ *ʔen-), *(-)ni 'in, into, towards, besides, moreover'
Sentence particle: *wa (~ *wə) 'and, also, but; like, as'
Coordinating conjunction: *ʔaw-, *ʔwa- (~ *ʔwə-) 'or'

Note: The *CVC-* root structure patterning of some of these forms points to their ultimate nominal or verbal origin. For example, the negative particle *ʔal- (~ *ʔəl-) must ultimately have been a negative verb stem meaning 'to be not so-and-so', as in its Dravidian derivatives, while *ʔin- (~ *ʔen-), *(-)ni was originally a nominal stem meaning 'place, location'.

## 10.0. Nostratic Kinship Terminology

Now that we have discussed the evidence for setting up a Nostratic macrofamily and have summarized the salient phonological, morphological, and syntactical characteristics of the Nostratic parent language, we can turn our attention to the question as to whether sufficient

progress has been made in Nostratic studies to reconstruct the kinship terminology and kinship system of the speakers of that parent language. This paper is a response to two recent studies that have attempted to do just that. The first study was by Aharon Dolgopolsky and appeared as part of his 1998 book *The Nostratic Macrofamily and Linguistic Palaeontology* (pp. 84—95), and the second study was a 2005 article by A. Dybo and S. V. Kullanda entitled "Ностратическая терминология родства и свойства" [Nostratic Terminology of Kinship and Affinity], which appeared in *Алгебра Родства (Algebra Rodstva)* 9:5—31.

As is well known, kinship systems can be classified into several distinct types — six possible systems are typically distinguished among anthropologists, each of which can occur in a number of subtypes. These systems tell us how the social community views not only parents and siblings (kinship) but also those related by marriage or custom (affinity). It should be noted that kinship systems can and do change over time.

We may begin by looking at Dolgopolsky's views. In Section 8 of his 1998 book, Dolgopolsky reconstructs twelve kinship terms for Proto-Nostratic (the remarks accompanying each etymology are an updated version of what appeared in my 1999 review of Dolgopolsky's book):

1. **\*kälu/ü** 'a woman of the other exogamous moiety': this is a strong etymology, though the semantics found in the individual Nostratic daughter languages are too divergent to support the meaning assigned by Dolgopolsky for the putative Proto-Nostratic term. We should note that the initial \*ĝ- in the Proto-Indo-European form given by Dolgopolsky as a cognate is irregular — I would expect \*k̂- instead. This may mean that the Indo-European form is a false cognate. In Bomhard—Kerns (1994:438—439, no. 283), I attempted to show that Proto-Indo-European \*ĝ(e)lōu̯- 'husband's sister' is to be derived from the same root found in Greek γάλα 'milk', Latin *lac* 'milk', and Hittite *galattar, galaktar* 'soothing substance, balm, nutriment', *gala(n)k-* 'to soothe, to satiate, to satisfy', all ultimately from an unattested \*(ĝel-)/\*ĝl̥-/\*ĝ(e)l- 'to suckle, to nourish'. I assumed the same semantic development as in Greek τηθίς 'father's or mother's sister, aunt' and Sanskrit *dhénā* 'female', both of which are derived from Proto-Indo-European \*dhē(i)- 'to suck, to suckle'. I then compared the Indo-European forms with the following Semitic forms: Amharic *ḳälläbä* 'to feed, to provide support, to nourish', *ḳälläb* 'food, supplies, rations, stipend'; Tigrinya *ḳälläbä* 'to feed'; Argobba *ḳälläba* 'to feed'; Gurage *ḳälläbä* 'to support by providing food, to feed'. This view must now be abandoned. What we find is that the Proto-Indo-European term has an exact match in Proto-Altaic, which is reconstructed as \*kele (~ -i, -o) 'daughter-in-law, bride' by Starostin—Dybo—Mudrak (2003:659). Thus, two distinct terms must be reconstructed here: (1) Proto-Nostratic \*kʰal- 'female relative', which has derivatives in Afrasian, Dravidian, Kartvelian, and Uralic, and (2) Proto-Nostratic (only in Eurasiatic) \*k'el- 'female in-law; husband's sister', which has derivatives in Indo-European and Altaic (see below for details).

2. **\*kuda** 'a man of the other moiety' (> 'male relative-in-law'): this is a possible etymology, though the sound correspondences are a bit irregular — Proto-Uralic \*δ is not equal to IPA [ð]. Rather, it appears to have been some sort of lateral, most likely a fricative lateral [ɬ] or a lateralized affricate [tɬ] — my own research indicates that Proto-Nostratic \*tɬʰ- became

*ś- (Dolgopolsky writes *ŝ-) initially in Proto-Uralic but *-δ- (= [tɬ]) medially.  Finally, I would remove the Kartvelian forms given by Dolgopolsky from this etymology.

3.  **\*śeʒA** 'a relative of the other moiety' ('father/son-in-law, mother's brother, and sim.'):  this is a possible etymology, though the Afrasian forms are too divergent phonologically to be given serious consideration.  My interpretation of the sound laws involved here is a little different than Dolgopolsky's interpretation — consequently, I would reconstruct Proto-Nostratic *siʒ- (~ *seʒ-) 'father/son-in-law, mother's brother, etc.'.

4.  **\*[ħ/χV]wäń/nV** 'relative (of a younger/the same generation)':  this is a possible etymology, though the Egyptian forms given by Dolgopolsky do not appear to belong here either semantically or phonologically.  In my 1996 book (Bomhard 1996:217, no. 621), I set up a slightly different etymology on the basis of some of the same forms cited by Dolgopolsky:  Proto-Nostratic *wan- (~ *wən-) 'first, first-born, eldest':  (A) Afrasian: Proto-Highland East Cushitic *wanaa 'first' > Burji wanáy 'first-born', wanawwa 'eldest sister', wanay, wonáy 'eldest brother'; Kambata wana(a) beetu 'first-born' (beetu = 'child'), wanabii 'first'; (B) Uralic:  Proto-Finno-Permian *wanša 'old' > Finnish vanha 'old', vanhemmat 'parents'; Estonian vana 'old'; Votyak / Udmurt vuž 'old'; Zyrian / Komi važ 'old' (cf. Rédei 1986—1988:813 *wanša); (?) Proto-Finno-Ugrian *wŏnʒ 'old' > Zyrian / Komi vener 'old'; Hungarian vén 'old' (cf. Rédei 1986—1988:589—590 *wŏnʒ); and (C) Dravidian:  Kolami vanna 'brother's wife'; Naikṛi vanna 'older brother's wife'; (?) Konḍa oni 'older brother's wife, maternal uncle's daughter (older than person concerned)'; (?) Pengo oni 'older brother's wife' (cf. Burrow—Emeneau 1984:474, no. 5251).

5.  **\*n/cu/üśV** or **\*n/cu/üsyV** 'woman (general term)', 'woman of the other moiety':  Orël—Stolbova (1995:406, no. 1887) reconstruct Proto-Afrasian *nüs- 'woman', but the very next entry (1995:407, no. 1888) is *nüs- 'man'.  The meaning 'woman' appears to be secondary, which throws doubt on the validity of this etymology.  The Kartvelian form is indeed a loan from Indo-European, and Indo-European loans are also found in Northwest Caucasian (cf. Bžedux nəsa '[father's] brother's wife, daughter-in-law').

6.  **\*Hić/cχV** or **\*-ć/c̣-**, **\*-γ/g/h-** 'father, head of a family':  though the semantics are acceptable, the phonology is not plausible.  Therefore, this etymology must be rejected.

7.  **\*ʔediNV** 'pater familias' (or 'owner'):  this is a possible etymology.  I would reconstruct Proto-Nostratic *ʔid-nV- (~ *ʔed-nV-) 'father, head of family' (or 'owner').

8.  **\*ʔemA** 'mother':  this is a good etymology.  I would reconstruct Proto-Nostratic *ʔema 'older female relative; mother; (older) woman' (see below for details).  Another term must be reconstructed here as well:  Proto-Nostratic*ʔam(m)a (~ *ʔəm(m)a) 'mother' (nursery word) (see below for details).

9.  **\*ʔ[ä]yV** (or **\*h[ä]yV**) 'mother' (originally a nursery word): this is a good etymology. Note also Proto-Inuit *ayak* 'maternal aunt'. I would reconstruct Proto-Nostratic *\*ʔay(y)a* 'mother, female relative' (see below for details).

10. ?? **\*ʔaba ~ \*ʔap̣a** 'daddy, father' (a nursery word): this is a good etymology. Note also Proto-Eskimo *ap(p)a* 'grandfather'. I would reconstruct Proto-Nostratic *\*ʔab(b)a* 'daddy, father' (see below for details).

11. **\*ʕoġul/l̩V** 'child, one's child; to beget, to bear a child': this etymology is not convincing. Note that Orël—Stolbova (1995:247, no. 1110) reconstruct Proto-Afrasian *\*ʕigal-* 'cow, calf'. In Bomhard—Kerns (1994:518, no. 365), I compared the Afrasian forms with the following Indo-European forms: Avestan *azī* 'with young (of cows or mares)'; Sanskrit *ahī́* 'cow'; Middle Irish *ag* 'ox, cow', *ál* (< *\*aglo-*) 'litter, brood'; perhaps also Armenian *ezn* (with *e*-vocalism) 'ox' — all from Proto-Indo-European *\*ₐ₂eĝh-* 'with young (of animals)' (cf. Pokorny 1959:7 *\*aĝh-* 'pregnant animal'; Walde 1927—1932.I:38; Mann 1984—1987:233 *\*eĝhis* 'ox, cow'; Mallory—Adams 1997:135 *\*h₁eĝh-* 'cow').

12. **\*ʔarV** 'member of the clan': this is a good etymology, though this does not appear to be specifically a kinship term — the meaning is more general in scope. I would reconstruct Proto-Nostratic *\*ʔar-* '(n.) associated or related person or thing; associate, companion, friend; kinsman; (adj.) associated, related' (see below for details).

Nearly half of the kinship etymologies proposed by Dolgopolsky are not convincing or must be rejected. Among the convincing etymologies, are those for 'a woman of the other exogamous moiety', 'a relative of the other moiety', 'relative through marriage, in-law (male or female)', 'father, head of family', 'daddy, father', 'mother', and 'member of the clan'. Moreover, the meanings assigned by Dolgopolsky and the conclusions drawn by him about the kinship system existing among the speakers of the Nostratic parent language go beyond what the evidence warrants. Consequently, the kinship terms reconstructed by Dolgopolsky tell us relatively little about the family structure of the speakers of Proto-Nostratic.

Next, we will look at the study by Anna Dybo and S. V. Kullanda. After a short introduction, Dybo—Kullanda examine a large number of putative Nostratic kinship terms, taken mainly from the works of Vladislav Illič-Svityč and Aharon Dolgopolsky. Their study ends with a three-page table in which they summarize their findings. As with the study by Dolgopolsky, I will list and comment briefly upon each Proto-Nostratic kinship term reconstructed by Dybo—Kullanda (since it would needlessly add to the length of this paper, I will avoid citing supporting material [this is given in my forthcoming book]; instead, I will mostly just cite reconstructed proto-forms and then list the principal etymological dictionaries for each branch of Nostratic; the reader is invited to consult these works for additional information):

1.  **\*(a)pa** 'oldest male relative': So many unrelated forms are mixed together here that this etymology must be rejected outright. The following forms are to be reconstructed at the Proto-Nostratic level:

A. Proto-Nostratic *baba 'father' (nursery word): Proto-Afrasian *baba 'father' (cf. Orël—Stolbova 1995:42, no. 165, *bab- 'father'); Proto-Kartvelian *baba 'father' (cf. Klimov 1964:47 *baba; Schmidt 1962:94); Proto-Indo-European (?) *baba- (Palaic [nom. sg.] pa-a-pa-aš 'father') (the phonetics are uncertain here). Note also: Sumerian ba-ba-a 'old man'.

B. Proto-Nostratic *p'ap'a- 'older male relative, grandfather': Proto-Kartvelian *p'ap'- 'grandfather' (cf. Fähnrich—Sardshweladse 1995:271 *ṗaṗ-; Klimov 1964:152 *ṗaṗal- and 1998:147—148 *ṗaṗa- 'grandfather'); (?) Proto-Indo-European (f.) *p'ăp'aA > *p'ăp'ā 'old woman' (cf. Mann 1984—1987:49 *bābā 'old woman') (the phonetics are uncertain here as well) — the expected masculine form, *p'ăp'os 'old man, father', may be represented in Palaic (nom. sg.) pa-a-pa-aš 'father', cited above. The cuneiform syllabary makes it difficult to determine the exact phonetics of the Palaic form.

C. Proto-Nostratic *ʔab(b)a ~ *ʔapʰ(pʰ)a (perhaps also *ʔap'(p')a) 'daddy, father; forefather' (nursery words): Proto-Afrasian *ʔab- 'father, forefather, ancestor' (Orël—Stolbova 1995:1, no. 2, *ʔab- 'father'); Proto-Dravidian *app-a- 'father' (cf. Krishnamurti 2003:10 *app-a- 'father'; Burrow—Emeneau 1984:15—16, no. 156); Proto-Indo-European *ʔabʰ- 'father, forefather, man' (only found in Germanic: Gothic aba 'man, husband'; Old Icelandic afi 'grandfather, man'; Old English personal names Aba, Abba, Afa; Old High German personal name Abo) and Proto-Indo-European *ʔapʰpʰa 'father' (cf. Pokorny 1959:52 *appa 'father' [nursery word]; Walde 1927—1932.I:47 *apa); Uralic: Proto-Finno-Ugrian *appe 'father-in-law' (cf. Collinder 1955:72 and 1977:89; Rédei 1986—1988:14 *appe); Proto-Altaic *aba ~ *apʰa 'father' (cf. Poppe 1960:56; Street 1974:7 *aba-ka 'paternal uncle'; Starostin—Dybo—Mudrak [2003:310] reconstruct Proto-Altaic *áp'a 'father'. However, such a reconstruction cannot account for the -b- found in the Mongolian cognates [cf. Poppe 1955:74] they cite, which point, instead, to Proto-Altaic *aba 'father'. Thus, two separate forms must be reconstructed at the Proto-Altaic level: *aba ~ *apʰa 'father'); Proto-Eskimo *ap(p)a 'grandfather' (cf. Fortescue—Jacobson—Kaplan 1994:36); Etruscan apa 'father, husband', apana 'related to the father, paternal'. Note also: Sumerian a-ba, ab, ab-ba 'father'.

The remaining forms cited by Dybo—Kullanda do not appear to have Nostratic cognates. If Proto-Altaic *épʰV 'grandfather' (cf. Starostin—Dybo—Mudrak 2003:515 *ép'V) is to be compared with any of the above forms, the initial *e- for expected *a- must be explained. On the other hand, the etymology of the Proto-Indo-European form traditionally reconstructed as *pəter- 'father' (cf. Pokorny 1959:829 *pətḗ(r); Walde 1927—1932.II:4 *pətér-; Mann 1984—1987:932 *pətĕr-, *pətr-; Watkins 2000:67 *pəter-; Mallory—Adams 1997:194—195 *phₐtér; Gamkrelidze—Ivanov 1995.I:671 *pʰH̥tʰer-) is disputed. Some take it to be a derivative of *pā- (< *peₐ₂-) ~ *pə- 'to protect', while others reject this view. At the present time, it is best to consider *pəter- to be strictly a Proto-Indo-European creation and not to seek an etymological explanation within the context of Nostratic.

2.  **\*ata** 'the very oldest male relative on the male side': This is a better etymology, though the alleged Uralic cognate cited by Dybo—Kullanda does not belong here, nor do the Proto-Indo-European forms \*tĕt-, \*tăt-, while Dravidian \*āt- 'mother' (cf. Burrow—Emeneau 1984:33, no. 358 [Tamil *āttai, āttāḷ, āttā* 'mother'; Malayalam *āttōḷ, āttōl* 'Nambutiri's wife']) is cleary secondary and should not even be reconstructed for Proto-Dravidian. Moreover, the meaning they assign to the Proto-Nostratic form seems to be going a bit beyond what the evidence implies. Again, let us take a closer look at the evidence from the Nostratic daughter languages that I have gathered:

    Proto-Nostratic \*ʔatʰtʰa 'older male relative, father' (nursery word): Proto-Afrasian \*ʔat(ta)- (Egyptian *it* 'father'; Coptic *yōt* [ⲉⲓⲱⲧ] 'father'); Proto-Dravidian \*atta 'father' (cf. Burrow—Emeneau 1984:15, no. 142); Middle and Royal Achaemenid Elamite *atta* 'father'; Proto-Indo-European \*ʔatʰtʰa 'father, daddy' (cf. Pokorny 1959:71 \*ătos, \*atta 'daddy'; Walde 1927—1932.I:44 \*atta; Mann 1984—1987:39 \*atā [\*attā, -os, -i̯os] 'daddy'; Watkins 1985:4 \*atto- and 2000:6 \*atto- 'father' [nursery word]; Mallory—Adams 1997:195 \*at- [or \*hₐet- ~ \*h₁at-] 'father'); Etruscan *ateri* 'parents, ancestors' (derivative, based upon an unattested \*at- 'father'). Proto-Altaic \*ĕtʰe 'elder male relative' (cf. Poppe 1960:51, 56, and 103; Street 1974:12 \*etiké(y) 'some older male relative'; Starostin—Dybo—Mudrak 2003:523—524 \*ĕ t'è 'elder relative') has an unexplained initial \*ĕ- for expected \*ă-.

3.  **\*acwV** 'older male relative', specifically, 'uncle': This etymology cannot stand as written. First, the Proto-Indo-European form cited by Dybo—Kullanda does not belong here. Next, there were no phonemically voiced stops or affricates in Proto-Dravidian, which means that a reconstruction \*aȝ̌ȝ̌- would be out of the question. Finally, two forms are indeed to be reconstructed at the Proto-Uralic level: \*ätʸä 'father' (cf. Rédei 1986—1988:22 \*äćä; Collinder 1077:24) and \*itʸä 'father' (cf. Rédei 1986—1988:78 \*ićä; Collinder 1977:37). The first form is cognate with Proto-Altaic \*ăč(V) 'older relative, ancestor' (cf. Starostin—Dybo—Mudrak 2003:271—272 \*ăč(V)), but the second Proto-Uralic form must be removed — Proto-Uralic \*i- does not correspond to Proto-Altaic \*ă-. This etymology should be rewritten as follows:

    Proto-Nostratic \*ʔatʸa 'older relative (male or female)' (nursery word): Proto-Dravidian \*accV- 'father, mother; old man, old woman; grandfather, grandmother; father's father, father's mother' (cf. Burrow—Emeneau 1984:6, no. 50); Proto-Uralic \*ätʸä 'father'; Proto-Altaic \*ăčV 'older relative, ancestor'; Proto-Eskimo \*accaɣ 'paternal aunt' (cf. Fortescue—Jacobson—Kaplan 1994:4).

4.  **\*ena** 'older female relative, possibly on the male side', perhaps 'grandmother': The phonetics do not match in the forms cited from the daughter languages (Proto-Altaic \*e- does not correspond to Proto-Uralic \*a-, which means that the Altaic and Uralic forms cited by Dybo—Kullanda cannot possibly be related). Consequently, this etymology cannot stand as written. The following etymology may be substituted here:

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Proto-Nostratic *ʔaŋ(ŋ)a 'woman, female, female relative' (nursery word):  Afrasian (Proto-Southern Cushitic *ʔaŋ- 'father's sister'); Proto-Dravidian *aṇṇV 'a woman' (cf. Burrow—Emeneau 1984:14, no. 132); Proto-Indo-European *ʔan(n)o-s, *ʔan(n)i-s, *ʔan(n)a 'mother' (cf. Pokorny 1959:36—37 [nursery word] *an-; Walde 1927—1932.I:55—56 — the Indo-European forms are phonologically ambiguous and either belong here or with Proto-Nostratic *ʔanʸa 'mother, aunt' [see below]).

5.   **\*ʔVńV** ? 'mom, mommy':  So many unrelated forms are mixed together here that this etymology must be rejected.  However, all of the forms cited from the daughter languages actually can be traced back to Proto-Nostratic as part of other etymologies:

   A.   Proto-Nostratic *ʔanʸa 'mother, aunt' (nursery word):  Dravidian (Tamil aññai 'mother', annai, tannai 'mother, elder sister', emm-aṉai 'our mother', tamm-aṉai 'mother' [cf. Burrow—Emeneau 1984:7, no. 58]); Proto-Indo-European *ʔan(n)o-s, *ʔan(n)i-s, *ʔan(n)a 'mother' (cf. Pokorny 1959:36—37 [nursery word] *an-; Walde 1927—1932.I:55—56 — the Indo-European forms are phonologically ambiguous and either belong here or with Proto-Nostratic *ʔaŋ(ŋ)a 'woman, female, female relative' [see above]); Proto-Uralic *anʸa 'mother, aunt' (cf. Rédei 1986—1988:10—11 *ańa; Collinder 1977:25); Proto-Eskimo *a(a)na 'mother, grandmother' (expressive gemination of the initial vowel) (cf. Fortescue—Jacobson—Kaplan 1994:25) and Proto-Eskimo *ana(a)na (probably a reduplication of *a(a)na) 'older female relative' (cf. Fortescue—Jacobson—Kaplan 1994:26).
   B.   Proto-Nostratic *ʔenʸa 'mother, elder sister' (nursery word):  Uralic: Proto-Finno-Permian *enä 'mother' (cf. Rédei 1986—1988:624—625 *enä); Proto-Altaic *ĕnʸa 'mother, elder sister' (cf. Starostin—Dybo—Mudrak 2003:510 *ĕ ńa 'mother, elder sister').  Note that Uralic (Proto-Finno-Permian here) *e- corresponds to Proto-Altaic *e- in this example.  This is what we would expect.  Note also: Sumerian en 'lady, mistress'.
   C.   Proto-Nostratic *ʔay(y)a 'mother, female relative' (nursery word):  Proto-Afrasian *ʔay(y)- 'mother' (Proto-East Cushitic *ʔaayy- 'mother'); Proto-Dravidian *āy 'mother' (cf. Krishnamurti 2003:10 *āy 'mother'; Burrow—Emeneau 1984:34, no. 364); Proto-Indo-European *ʔay-tʰ- 'mother' (found only in Germanic:  Gothic aiþei 'mother'; Old Icelandic eiða 'mother'; Middle High German eide 'mother'); Eskimo:  Proto-Inuit *ayak 'maternal aunt' (cf. Fortescue—Jacobson—Kaplan 1994:59).

6.   **\*emV** 'mother' = 'woman':  Once again, multiple unrelated forms are included here.  First, Proto-Indo-European *mā-ter- 'mother' must be completely removed from consideration. To account for the remaining forms, two separate stems must be reconstructed for Proto-Nostratic instead of the single stem posited by Dybo—Kullanda:

   A.   Proto-Nostratic *ʔam(m)a (~ *ʔəm(m)a) 'mother' (nursery word):  Proto-Afrasian *ʔam(m)a 'mother' (cf. Orël—Stolbova 1995:10, no. 34, *ʔam- 'woman'); Proto-Dravidian *amma 'mother' (cf. Krishnamurti 2003:10 *amm-a 'mother'; Burrow—

Emeneau 1984:18, no. 183); Proto-Indo-European *ʔam(m)a 'mother' (cf. Pokorny 1959:36 *am(m)a, *amĭ 'mommy'; Walde 1927—1932.I:53 *am(m)a); (?) Proto-Eskimo *ama(C)uʀ 'great grandparent' (cf. Fortescue—Jacobson—Kaplan 1994:22 — also: Western Canadian Inuit [Netsilik, Copper] amaama 'mother'). Note also: Sumerian ama 'mother'.

B. Proto-Nostratic (Eurasiatic only) *ʔema 'older female relative; mother; (older) woman': Proto-Uralic *emä 'mother' (cf. Collinder 1955:10 and 1977:31—32; Rédei 1986—1988:74 *emä); Proto-Altaic *ĕme 'woman, female' (cf. Starostin—Dybo—Mudrak 2003:504 *ĕ́me 'woman, female'); (?) Eskimo: Proto-Yupik *əma 'grandmother' (cf. Fortescue—Jacobson—Kaplan 1994:109).

7. **\*säwз̌V** 'sister' (?): though the semantics are partially acceptable (but not for the Proto-Kartvelian form), the phonology is not. Therefore, this etymology must be rejected.

8. **\*berA** 'brother': This etymology appears to be a case of trying to force the data to fit a preconceived notion. Proto-Altaic *bĕré is best interpreted simply as 'daughter-in-law' ('невестка'), just as given in Starostin—Dybo—Mudrak (2003:340). There is little justification from within Altaic itself for a reinterpretation of the meaning of the proto-form as 'brother's wife' or 'wife of the elder brother' ('жена брата' / 'жена старшего брата'), though these meanings are found in certain Mongolian derivatives (such as Written Mongolian bergen 'wife of an elder brother'). According to Benveniste (1973:172—173), the Proto-Indo-European term traditionally reconstructed as *bhrāter- was not applied to a consanguineous brother but, rather, to those who were bound by a mystical relationship and considered themselves descendants of the same father: "… *bhrāter denoted a fraternity which was not necessarily consanguineous." In view of Benveniste's findings, it would be wise to consider Proto-Indo-European *bhrāter- as a specific Indo-European development and not look for cognates in other Nostratic branches. This etymology must be rejected.

9. **\*ʔaḳV** most likely 'older brother': Reconstructing a voiceless velar ejective in the Nostratic proto-form is purely ad hoc — the data from the daughter languages point, rather, to a voiceless aspirated velar stop here, just as in the Proto-Altaic derivative. Again, Proto-Uralic *e- does not correspond either to Proto-Altaic *ă- or to Proto-Dravidian *a-. This etymology must be rewritten as follows:

A. Proto-Nostratic *ʔakʰkʰa 'older female relative' (nursery word): Proto-Afrasian *ʔakk- 'grandmother' (Proto-East Cushitic *ʔaakk- 'mother's mother, grandmother'); Proto-Dravidian *akka- 'elder sister' (cf. Krishnamurti 2003:10 *akka- 'elder sister'; Burrow—Emeneau 1984:4, no. 23); Proto-Indo-European (f.) (*ʔakʰkʰeA [*ʔakʰkʰaA] >) *ʔakʰkʰā 'female relative, mother' (cf. Pokorny 1959:23 *akkā 'mother'; Walde 1927—1932.I:34 *akkā); Uralic: Finnish akka 'old woman'; Proto-Eskimo *a(a)kaʀ 'older female relative' (with expressive gemination of initial vowel) (cf. Fortescue—Jacobson—Kaplan 1994:10). If Proto-Altaic *ĕkʰa 'elder sister' (cf. Poppe 1960:55, 103, and 128; Street 1974:12 *eke 'some older female relative';

Starostin—Dybo—Mudrak 2003:499—500 *ĕk'à (~ -o) 'elder sister') is related to these forms, one must account for the *ĕ- instead of the expected *ă-.

B.   Proto-Nostratic *ʔakʰkʰa 'older male relative' (nursery word):  Proto-Afrasian *ʔak- 'older male relative' (Proto-Highland East Cushitic *akako 'grandfather, grandmother'; Southern Cushitic:  Proto-Rift *ako 'old man'); Dravidian (Parji akka 'mother's father'; Gondi akkō 'mother's father [said by granddaughter]', akko 'great grandfather', akko 'daughter's son or daughter, grandson's wife', ukko (that is, akko) 'maternal grandfather'; Pengo ako 'maternal grandfather'; Kui ake 'grandfather, ancestor', akeṇja 'grandfather'; Kuwi akku 'grandfather' [cf. Burrow—Emeneau 1984:4, no. 24]); Proto-Altaic *ākʰa 'older male relative' (cf. Poppe 1960:55, 94, 124, and 146; Street 1974:7 *aka 'some older male relative'; Starostin—Dybo— Mudrak 2003:281—282 *ắk'a 'elder brother').

These forms can be combined by positing Proto-Nostratic *ʔakʰkʰa 'older relative (male or female)' (nursery word).

10.   **\*eŋV** (?) 'brother (?), sister (?)':  This is not a valid etymology.  Proto-Altaic *i- does not correspond to Proto-Dravidian *a-.  A better proposal would be:

Proto-Nostratic *ʔina (and/or *ʔiŋa) 'younger relative (male or female)' (nursery word): Proto-Afrasian *ʔin(a) or *ʔiŋ(a) 'younger relative (male or female)' (Proto-East Cushitic *ʔinam-/*ʔinm- (m.) 'son, boy', (f.) 'daughter, girl'); Proto-Altaic *īna 'younger relative (male or female)' (cf. Starostin—Dybo—Mudrak 2003:587—588 *ĩna 'younger sibling'); (?) Eskimo (Proto-Inuit *inʀutaq 'grandchild') (cf. Fortescue—Jacobson—Kaplan 1994: 134).

11.   **\*aCV** 'younger brother/sister':  This is also not a valid etymology.  Proto-Altaic *ă- does not correspond to Proto-Uralic *e-.

12.   **\*jugV** 'son; boy, lad':  This is a difficult etymology to judge.  The reconstruction of the Altaic form as *i̯uga is itself somewhat controversial.  As noted by Starostin—Dybo— Mudrak (2003:91):  "The phonetic nature of PA diphthongs is still debatable.  We prefer to treat them as diphthongs because they are preserved as such in a number of cases in PT, PTM and Korean, but an interpretation of diphthongs as front vowels could also be possible:  *i̯a = *ä; i̯o = *ö; i̯u = *ü.  Further research is needed to choose one of these two alternative solutions."  Likewise, the phonology of the Proto-Uralic form is uncertain; Rédei (1986—1988:109) reconstructs *(j)ĕk₃ ~ *(j)ĕɣ₃ 'son, youth' (*ĕ is a cover symbol for an unspecified front vowel).  Also, the data are rather spotty in Uralic.  On the other hand, the semantics are flawless.  At the present time, we can only say that this is a possible etymology and withhold further judgment.

13.   **\*mVḳV** 'male; boy, lad':  Proto-Altaic *ŭ- does not correspond to Proto-Dravidian *a-. Furthermore, a Proto-Dravidian reconstruction *maɣ-l- is simply out of the question — Krishnamurti (2003:10, 163, 218) reconstructs Proto-Dravidian *mak-anṯu 'son, male',

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*mak-aḷ 'daughter'.  Consequently, this etymology cannot stand as written — it should be replaced by the following:

Proto-Nostratic *mag- '(adj.) young; (n.) young person, child':  Proto-Dravidian *mak-anṯu 'son, male', *mak-aḷ 'daughter' (cf. Krishnamurti 2003:10, 163, 218; Burrow—Emeneau 1984:407—408, no. 4616); Proto-Indo-European *magʰ- 'young', *magʰu- 'young person, child' (cf. Pokorny 1959:696 *maghos, -ā 'young', *maghu- 'boy, child'; Walde 1927—1932.II:228 *maghu-; Mallory—Adams 1997:656 *maghus 'young man').

14.  **\*AwV** '(mainly) an older relative':  The Kartvelian form should be removed, as should the Altaic.  The rest of the etymology can remain but should be rewritten as follows:

Proto-Nostratic *ħaw- 'a relative on the mother's side':  Proto-Dravidian *aww-a 'mother, grandmother' (cf. Krishnamurti 2003:10 *aww-a 'mother, grandmother'; Burrow—Emeneau 1984:25—26, no. 273); Proto-Indo-European *ħhewħho-s [*ħhawħho-s] 'maternal grandfather; maternal uncle' (cf. Mallory—Adams 1997:237—238 h₂euh₂os 'grandfather; mother's father'; Pokorny 1959:89 *au̯o-s 'maternal grandfather'; Walde 1927—1932.I:20—21 *au̯o-s; Mann 1984—1987:48 *au̯os, -ā, -i̯os, -i̯ə 'kinsman'; Watkins 2000:6 *awo- 'an adult male relative other than one's father'; Gamkrelidze—Ivanov 1995.I:668 *HauHo- 'grandfather, father's father').

15.  **\*gUśV-** 'relative by marriage; male relative on the mother's side':  Proto-Altaic *gu- does not correspond to Proto-Kartvelian *kw-.  Consequently, the Kartvelian form must be removed.  This leaves just Altaic and Uralic.  Starostin—Dybo—Mudrak (2003:575) posit Proto-Altaic *gusa (~ -o-, -č-) 'elder male relative', while Rédei (1986—1988:189) posits Proto-Uralic *koska 'an older relative; grandmother, aunt, older sister'.  These may ultimately be related, though only at the Eurasiatic level.  Thus, we may tentatively posit Proto-Eurasiatic *gus- ~ *gos- 'elder relative (male or female)'.  The Uralic derivative would then contain a suffix *-ka.

16.  **\*tajV** 'relative by marriage on the husband's side':  The Uralic form does not belong here.  I would rewrite this etymology as follows:

Proto-Eurasiatic *t'ay- '(elder) male in-law, (elder) male relative':  Proto-Indo-European *t'ay-wer-/*t'ay-wr̥- 'brother-in-law on husband's side' (cf. Pokorny 1959:179 *dāiu̯ēr- 'husband's brother, brother-in-law'; Walde 1927—1932.I:767 *daiu̯er-; Gamkrelidze—Ivanov 1995.I:662 *t'aiwĕr- 'husband's brother'; Watkins 2000:14 *daiwer- 'husband's brother'; Mallory—Adams 1997:84 *daihₐu̯ér- 'husband's brother'); Proto-Altaic *tāyV 'elder male in-law, elder male relative' (cf. Starostin—Dybo—Mudrak 2003:1350 *tā̆jV 'elder in-law, elder relative').

17.  **\*śeCV** 'relative by marriage / cousin on the husband's side':  The phonology is not plausible.  Therefore, this etymology must be rejected.

18.	**\*nanTV** 'sister-in-law':  Though this etymology is on the right track, the suggested Evenki cognate and first Dravidian form (\*nānd-) must be removed, and it must then be rewritten as follows:

Proto-Nostratic \*nat'- 'woman, female relative':  Afrasian (Proto-Southern Cushitic \*nat'a 'woman'); Dravidian (Tamil nāttanār, nātti, nāttūṇ 'husband's sister'; Malayalam nāttūn 'husband's sister, brother's wife'; Kota na·tu·ny 'sister-in-law, female cross-cousin'; Kannaḍa nādani, nādini, nāduni 'husband's sister, brother's wife'; Koṇḍa nānṟa 'wife's younger sister'; Kuṟux nāsgo 'elder brother's wife' [cf. Burrow—Emeneau 1984:322, no. 3644]); Proto-Uralic \*natɜ 'sister-in-law, younger brother of the husband or the wife' (cf. Collinder 1977:56; Rédei 1986—1988:299—300 \*natɜ).

19.	**\*ńeŋV** 'brother's wife':  The Kartvelian and Indo-European forms do not match the Altaic and Uralic forms phonologically and must, therefore, be removed.  The Altaic and Uralic forms may ultimately be related, though, even here, the phonology is a bit too lax.

20.	**\*mVjNV** 'relation, relative, kin':  The phonology is not plausible.  Hence, this etymology must be rejected.

21.	**\*kälU** 'sister-in-law':  As noted above, two distinct proto-forms must be reconstructed here:

A.	Proto-Nostratic \*kʰal- 'female in-law':  Proto-Afrasian \*kal- 'female in-law' (cf. Orël—Stolbova 1995:310, no. 1419, \*kal- 'female in-law'); Dravidian (Kuṟux xallī 'father's younger brother's wife'; Malto qali 'mother's sister', qalapo 'sister's son', qalapi 'sister's daughter' [cf. Burrow—Emeneau 1984: 123, no. 1318]); Kartvelian (Old Georgian kal-i 'maiden' [Modern Georgian kal-i 'woman, daughter']); Proto-Uralic \*kälɜ (\*kälɜ-wɜ) 'sister-in-law' (cf. Collinder 1977:43; Rédei 1986—1988:135—136 \*kälɜ [\*kälɜ-wɜ]).
B.	Proto-Nostratic (only in Eurasiatic) \*k'el- 'female in-law; husband's sister':  Proto-Indo-European \*k'(a)lowV-, \*k'(a)lōC- 'husband's sister' (cf. Pokorny 1959:367—368 \*ĝ(e)lōu̯- 'husband's sister'; Walde 1927—1932.I:631 \*ĝ(e)lōu̯-; Mann 1984—1987:396 \*ĝəlōu̯-, \*ĝələu̯- 'sister-in-law on husband's side'; Gamkrelidze—Ivanov 1995.I:662 \*k̂'al(ou-) 'husband's sister'; Mallory—Adams 1997:521—522 \*ĝl̥h₃-u̯os- 'husband's sister'; Benveniste 1973:203); Proto-Altaic \*kele (~ -i, -o) 'daughter-in-law, bride' (cf. Starostin—Dybo—Mudrak 2003:659 \*kele [~ -i, -o] 'daughter-in-law, bride').

22.	**\*kUdV** 'relative by marriage':  As noted above under **\*kuda** 'a man of the other moiety' (> 'male relative-in-law'), this is a possible etymology.

23.	**\*ʔVwḳV** 'wife (?)':  This is a possible etymology, though only at the Eurasiatic level. There is no justification for positing a glottalized velar stop in the proto-form.

24. **\*nVHV** 'nephew': The phonology is not plausible. Thus, this etymology must be rejected. Also, the Proto-Indo-European form is wrongly segmented — it is better understood if it is segmented thus: *nep-ōt- (cf. Mallory—Adams 1997:239—240: "Efforts to etymologize *ne-pot- as 'powerless' [< *ne- 'not' + *potis 'independent, dominating', i.e., young unmarried male of extended family] are pointless as the correct segmentation revealed by the feminine forms is *nep-ot- in which -ot- is the same nominal suffix found in Germanic *mēnōþ- 'month' [from 'moon'] or Hit[tite] sīw-att- 'day' [from 'daytime, sky']"). The Proto-Indo-European form may have a possible Nostratic etymology, as follows:

Proto-Nostratic *nʸapʰ- (~ *nʸəpʰ-) 'offspring, descendant, young one': Proto-Indo-European *nepʰ-(ō)tʰ- 'descendant, offspring, grandson' (cf. Pokorny 1959:764 *nepōt- 'grandson, nephew', [f.] *neptī- 'granddaughter, niece'; *neptios 'descendant'; Walde 1927—1932.II:329—330 *nepōt-, [f.] *neptī-; Mann 1984—1987:835—836 *nepis, nepō(n) 'nephew, grandson', 836 *nepōts [*nepət] 'nephew, grandson', 836 *nepteris [*neptris] 'niece, granddaughter', 838 *neptis 'niece, granddaughter'; Watkins 2000:58 *nepōt- 'grandson, nephew' [f. *neptī-]); Proto-Uralic *nʸeplɜ 'reindeer calf' (cf. Rédei 1986—1988:316 *ńeplɜ); (?) Proto-Altaic *nʸablʸu(-ǯV) (< *nʸapʰ-lʸu- ?) 'young (of plants, animals), child' (cf. Starostin—Dybo—Mudrak 2003:1002 *ńabĺu(-ǯu) 'young, child'). Latin loanword in Etruscan neftś, nefś, nefiś 'nephew, grandson'.

The semantics here are not as tight here as I would like, nor is the phonology. If this is indeed a valid etymology, it appears that each branch has changed the meaning in slightly different directions. This is clearly what has occurred in Uralic, where the meaning has been narrowed to indicate the young of a single animal (*nʸeplɜ 'reindeer calf'). We must also assume that the vowel of the first syllable has been altered in Proto-Uralic and that the vowel found in the first syllable of the Proto-Altaic form represents the original state of affairs. To complicate matters further, the Proto-Altaic form contains a *-b- instead of the expected *-pʰ- (Starostin—Dybo—Mudrak would write *-p'-).

25. **\*wolje** 'an indirect relative': The phonology is not plausible. Thus, this etymology must be rejected.

26. **\*tUŋE** 'relative, friend': This is a possible etymology. I would reconstruct Proto-Nostratic *t'uŋ- '(n.) associated or related person; associate, companion, friend; kinsman, relative; (adj.) associated, related'. The Proto-Dravidian cognate should be reconstructed as *tuṇ-ay (cf. Burrow—Emeneau 1984:289, no. 3308, for details) instead of *tUṇ-ai.

27. **\*swEjn-** 'younger relative': The phonology is not plausible. Thus, this etymology must be rejected.

28. **\*kemV** 'husband/wife': The phonology is not plausible. Thus, this etymology must be rejected.

29. **\*p̣odV** 'master, father-in-law': The Proto-Dravidian form is to be reconstructed as \*pot-
(cf. Burrow—Emeneau 1984:398—399, no. 4508, for details) and most probably meant 'a
relative by marriage, father-in-law'. Proto-Indo-European \*pʰotʰ-i-s meant 'lord, master,
husband' (cf. Pokorny 1959:842 \*poti-s 'lord, master, husband'; Walde 1927—
1932.II:77—78 \*poti-s; Gamkrelidze—Ivanov 1995.I:661 \*pʰotʰ- 'master, sovereign,
husband'; Mallory—Adams 1997:371 \*pótis 'husband'; Watkins 2000:69 \*poti- 'powerful;
lord'). This is a possible etymology. However, there is no evidence for positing either an
initial bilabial glottalized stop or a voiced dental stop at the end of the root — the Nostratic
proto-form should be rewritten as \*pʰotʰ- and may originally have meant something like
'head of the family or household', which was later specialized as 'husband' in Indo-
European and as 'father-in-law' in Dravidian.

30. **\*ʔedV** 'master': As noted above under **\*ʔediNV** 'pater familias' (or 'owner'), this is a
possible etymology.

31. **\*ḳaćV** (~ **-ć'-**) 'youth, young one': The initial velar ejective in the Proto-Kartvelian form
(cf. Klimov 1964:106 \*ḳac₁- and 1998:86—87 \*ḳac₁- 'man, male, husband'; Fähnrich—
Sardshweladse 1995:186 \*ḳac₁-) indicates that a velar ejective is also to be reconstructed
for Proto-Nostratic. Rédei (1986—1988:110) posits Proto-Uralic \*kaća 'young, unmarried
man'. Though this is a possible etymology, Proto-Kartvelian $*-c_1-$ does not normally
correspond to Proto-Uralic \*-ć- (see the table of correspondences in the Appendix at the
end of this paper for details).

32. **\*mVSV** 'male': The phonology is not plausible. Thus, this etymology must be rejected.

33. **\*HVṗV** 'family, friend (?)': Neither the phonology nor the semantics match. Therefore,
this etymology must be rejected.

34. **\*ʔarV** 'member of the clan': The Dravidian form included by Dybo—Kullanda should be
removed. Two separate stems are confused here. The first was noted above under **\*ʔarV**
'member of the clan', while the second was Proto-Nostratic \*ʔar- (~ \*ʔər-) 'male, man,
husband'. Let us look at each of these in a little more depth:

    A.   Proto-Nostratic \*ʔar- (~ \*ʔər-) 'male, man, husband': Proto-Afrasian \*ʔar-
'husband' (cf. Orël—Stolbova 1995:14, no. 49, \*ʔar- 'husband'); Proto-Indo-
European \*ʔer-s-/\*ʔr̥-s- 'male, man' (cf. Pokorny 1959:336 \*ers-, \*r̥s-; \*r̥sen
'manly, virile'; Walde 1927—1932.I:149—150; Mann 1984—1987:36 \*arsi̯ēn
[\*arsi̯ən, \*r̥si̯ēn, \*r̥si̯ən] 'male, manly'; Benveniste 1973:19—22; Mallory—Adams
1997:363 \*r̥sḗn 'male [as opposed to female]'); (?) Uralic: Proto-Ugric \*arʒ (\*arwa)
'relative on the mother's side; mother's younger brother' (cf. Rédei 1986—
1988:832—833 \*arʒ [\*arwa]); Proto-Altaic \*āri (~ \*ēra) 'male, man, husband' (cf.
Starostin—Dybo—Mudrak 2003:312 \*ắri [~ \*ḗra] 'man').
    B.   Proto-Nostratic \*ʔar- (~ \*ʔər-) '(n.) associated or related person or thing; associate,
companion, friend; kinsman; (adj.) associated, related': Proto-Afrasian \*ʔar- '(n.)

associated or related person or thing; associate, companion, friend; kinsman; (adj.) associated, related' (Ugaritic *ảry* 'kinsman'; Egyptian *iry, irỉ* 'one who belongs to someone or something, one who is in charge, keeper; friend, associate, companion'; Coptic [Bohairic] *ēr* [**HP**] 'friend'; Proto-Southern Cushitic *ʔar-* 'kind, associated or related thing'); Proto-Indo-European *ʔer-/*ʔor-/*ʔr̥- 'associated, related' (cf. Puhvel 1984— .1/2:116—121 *áro-; Mallory—Adams 1997:213 *h₄erós ~ *h₄eri̯os 'member of one's own [ethnic] group, peer, freeman').

## 11.0. Concluding Remarks

At the present stage of research, it is premature to attempt a kinship classification for Nostratic based upon the etymologies that have been proposed thus far. Not only are the data incomplete, many of the reconstructed forms are not exclusively Nostratic — similar forms are widespread among the languages of the world, and many of these are of the nature of nursery terms. While such terms should be reconstructed for the parent language when there is sufficient evidence from the daughter languages to warrant their reconstruction, the universal nature of these terms means that they cannot be used to establish genetic relationship. Moreover, the semantics are sometimes uncertain even at the level of the individual Nostratic daughter languages, and there are occasionally conflicts among the branches that make it difficult to ascertain the original meaning at the Proto-Nostratic level. Clearly, more work is required.

# Appendix: Nostratic Sound Correspondences

| Proto-Nostratic | Proto-IE | Proto-Kartvelian | Proto-Afrasian | Proto-Uralic | Proto-Dravidian | Proto-Altaic | Proto-Eskimo |
|---|---|---|---|---|---|---|---|
| b- | $b^h$- | b- | b- | p- | p- | b- | p- |
| -b- | -$b^h$- | -b- | -b- | -w- | -pp-/-vv- | -b- | -v- |
| $p^h$- | $p^h$- | p- | p-, f- | p- | p- | $p^h$- | p- |
| -$p^h$- | -$p^h$- | -p- | -p-, -f- | -p- | -pp-/-v- | -$p^h$- | -p(p)- |
| p'- | (p'-) | p'- | p'- | | | p- | |
| -p'- | (-p'-) | -p'- | -p'- | | | -p- | |

| Proto-Nostratic | Proto-IE | Proto-Kartvelian | Proto-Afrasian | Proto-Uralic | Proto-Dravidian | Proto-Altaic | Proto-Eskimo |
|---|---|---|---|---|---|---|---|
| d- | $d^h$- | d- | d- | t- | t- | d- | t- |
| -d- | -$d^h$- | -d- | -d- | -t- | -t(t)- | -d- | -ð- |
| $t^h$- | $t^h$- | t- | t- | t- | t- | $t^h$- | t- |
| -$t^h$- | -$t^h$- | -t- | -t- | -t(t)- | -tt- | -$t^h$- | -t(t)- |
| t'- | t'- | t'- | t'- | t- | t- | t- | t- |
| -t'- | -t'- | -t'- | -t'- | -t- | -t(t)- | -t- | -t- |

| Proto-Nostratic | Proto-IE | Proto-Kartvelian | Proto-Afrasian | Proto-Uralic | Proto-Dravidian | Proto-Altaic | Proto-Eskimo |
|---|---|---|---|---|---|---|---|
| $d^y$- | $d^h$- | žg- | $d^y$- | $t^y$- | c- | ž- | c- |
| -$d^y$- | -$d^h$- | -žg- | -$d^y$- | -$t^y$- | -c(c)-/-y- | -ž-/-d- | -c- |
| $t^{yh}$- | $t^h$- | čk- | $t^y$- | $t^y$- | c- | $č^h$- | c- |
| -$t^{yh}$- | -$t^h$- | -čk- | -$t^y$- | -$t^y$- | -c(c)-/-y- | -$č^h$- | -c(c)- |
| $t'^y$- | t'- | č'k'- | $t'^y$- | $t^y$- | c- | č- | c- |
| -$t'^y$- | -t'- | -č'k'- | -$t'^y$- | -$t^y t^y$- | -c(c)-/-y- | -č- | -c- |
| $s^y$- | s- | šk- | $s^y$- | $s^y$- | c- | s- | |
| -$s^y$- | -s- | -šk- | -$s^y$- | -$s^y$- | -c(c)-/-y- | -s- | |

| Proto-Nostratic | Proto-IE | Proto-Kartvelian | Proto-Afrasian | Proto-Uralic | Proto-Dravidian | Proto-Altaic | Proto-Eskimo |
|---|---|---|---|---|---|---|---|
| ʒ- | $d^h$- | ʒ- | ʒ- | č- | c- | ž- | c- |
| -ʒ- | -$d^h$- | -ʒ- | -ʒ- | -č- | -c(c)- | -ž-/-d- | -c- |
| $c^h$- | $t^h$- | c- | c- | č- | c- | $č^h$- | c- |
| -$c^h$- | -$t^h$- | -c- | -c- | -č- | -c(c)- | -$č^h$- | -c(c)- |
| c'- | t'- | c'- | c'- | č- | c- | č- | c- |
| -c'- | -t'- | -c'- | -c'- | -č- | -c(c)- | -č- | -c- |
| s- | s- | s- | s- | s- | c- | s- | |
| -s- | -s- | -s- | -s- | -s- | -c(c)- | -s- | |
| z- | s- | z- | z- | s- | | z- | |
| -z- | -s- | -z- | -z- | -s- | | | |

| Proto-Nostratic | Proto-IE | Proto-Kartvelian | Proto-Afrasian | Proto-Uralic | Proto-Dravidian | Proto-Altaic | Proto-Eskimo |
|---|---|---|---|---|---|---|---|
| ǯ- | dʰ- | ǯ- | ʒ- | č- | c- | ǯ- | c- |
| -ǯ- | -dʰ- | -ǯ- | -ʒ- | -č- | -c(c)- | -ǯ-/-d- | -c- |
| čʰ- | tʰ- | č- | c- | č- | c- | čʰ- | c- |
| -čʰ- | -tʰ- | -č- | -c- | -č- | -c(c)- | -čʰ- | -c(c)- |
| čʼ- | tʼ- | čʼ- | cʼ- | č- | c- | č- | c- |
| -čʼ- | -tʼ- | -čʼ- | -cʼ- | -č- | -c(c)- | -č- | -c- |
| š- | s- | š- | s- | s- | c- | s- | |
| -š- | -s- | -š- | -s- | -s- | -c(c)- | -s- | |

| Proto-Nostratic | Proto-IE | Proto-Kartvelian | Proto-Afrasian | Proto-Uralic | Proto-Dravidian | Proto-Altaic | Proto-Eskimo |
|---|---|---|---|---|---|---|---|
| g- | gʰ- | g- | g- | k- | k- | g- | k- q- |
| -g- | -gʰ- | -g- | -g- | -x- | -k- | -g- | -γ- |
| kʰ- | kʰ- | k- | k- | k- | k- | kʰ- | k- q- |
| -kʰ- | -kʰ- | -k- | -k- | -k(k)- | -k(k)- | -kʰ- | -k(k)- -q(q)- |
| kʼ- | kʼ- | kʼ- | kʼ- | k- | k- | k- | k- q- |
| -kʼ- | -kʼ- | -kʼ- | -kʼ- | -k- | -k(k)- | -k- | -k- -q- |

| Proto-Nostratic | Proto-IE | Proto-Kartvelian | Proto-Afrasian | Proto-Uralic | Proto-Dravidian | Proto-Altaic | Proto-Eskimo |
|---|---|---|---|---|---|---|---|
| gʷ- | gʷʰ- | gw/u- | gʷ- | k- | k- | g- | k- q- |
| -gʷ- | -gʷʰ- | -gw/u- | -gʷ- | -x- | -k- | -g- | -γ- |
| kʷʰ- | kʷʰ- | kw/u- | kʷ- | k- | k- | kʰ- | k- q- |
| -kʷʰ- | -kʷʰ- | -kw/u- | -kʷ- | -k(k)- | -k(k)- | -kʰ- | -k(k)- -q(q)- |
| kʼʷ- | kʼʷ- | kʼw/u- | kʼʷ- | k- | k- | k- | k- q- |
| -kʼʷ- | -kʼʷ- | -kʼw/u- | -kʼʷ- | -k- | -k(k)- | -k- | -k- -q- |

| Proto-Nostratic | Proto-IE | Proto-Kartvelian | Proto-Afrasian | Proto-Uralic | Proto-Dravidian | Proto-Altaic | Proto-Eskimo |
|---|---|---|---|---|---|---|---|
| ɢ- | gʰ- | ɢ- | ɢ- (?) | k- | k- | g- | k- q- |
| -ɢ- | -gʰ- | -ɢ- | -ɢ- (?) | -x- | -k- | -g- | -γ- |
| qʰ- | kʰ- | q- | q- (?) | k- | k- | kʰ- | k- q- |
| -qʰ- | -kʰ- | -q- | -q- (?) | -k(k)- | -k(k)- | -kʰ- | -k(k)- -q(q)- |
| qʼ- | kʼ- | qʼ- | qʼ- (?) | k- | k- | k- | k- q- |
| -qʼ- | -kʼ- | -qʼ- | -qʼ- (?) | -k | -k(k)- | -k- | -k- -q- |
| qʼʷ- | kʼʷ- | qʼw/u- | qʼʷ- (?) | k- | k- | k- | k- q- |
| -qʼʷ- | -kʼʷ- | -qʼw/u- | -qʼʷ- (?) | -k- | -k(k)- | -k- | -k- -q- |

| Proto-Nostratic | Proto-IE | Proto-Kartvelian | Proto-Afrasian | Proto-Uralic | Proto-Dravidian | Proto-Altaic | Proto-Eskimo |
|---|---|---|---|---|---|---|---|
| tɬʰ- | kʰ- | x- | tɬ- | sʸ- | c- | š- | ɬ- |
| -tɬʰ- | -kʰ- | -x- | -tɬ- | -δ- | -k- | | -ɬ- |
| tɬ'- | k'- | | tɬ'- | δʸ- | t- | | |
| -tɬ'- | -k'- | | -tɬ'- | -δʸ- | -ṭ(ṭ)- | | |

| Proto-Nostratic | Proto-IE | Proto-Kartvelian | Proto-Afrasian | Proto-Uralic | Proto-Dravidian | Proto-Altaic | Proto-Eskimo |
|---|---|---|---|---|---|---|---|
| ʕ- | ʕɦ- | Ø- | ʕ- | Ø- | Ø- | Ø- | Ø- |
| -ʕ- | -ʕɦ- | -Ø- | -ʕ- | -Ø- | -Ø- | -Ø- | -Ø- |
| ħ- | ħɦ- | x- | ħ- | Ø- | Ø- | Ø- | Ø- |
| -ħ- | -ħɦ- | -x- | -ħ- | -Ø- | -Ø- | -Ø- | -Ø- |
| ʔ- | ʔ- | Ø- | ʔ- | Ø- | Ø- | Ø- | Ø- |
| -ʔ- | -ʔ- | -Ø- | -ʔ- | -Ø- | -Ø- | -Ø- | -Ø- |
| h- | h- | Ø- | h- | Ø- | Ø- | Ø- | Ø- |
| -h- | -h- | -Ø- | -h- | -Ø- | -Ø- | -Ø- | -Ø- |

| Proto-Nostratic | Proto-IE | Proto-Kartvelian | Proto-Afrasian | Proto-Uralic | Proto-Dravidian | Proto-Altaic | Proto-Eskimo |
|---|---|---|---|---|---|---|---|
| y- | y- | y-/Ø- | y- | y- | y-/Ø- | | y- |
| -y- | -y- | | -y- | -y- | -y- | -y- | -y- |
| w- | w- | w- | w- | w- | v-/Ø- | | v- |
| -w- | -w- | -w- | -w- | -w- | -v- | | -v- |

| Proto-Nostratic | Proto-IE | Proto-Kartvelian | Proto-Afrasian | Proto-Uralic | Proto-Dravidian | Proto-Altaic | Proto-Eskimo |
|---|---|---|---|---|---|---|---|
| m- | m- | m- | m- | m- | m- | m- | m- |
| -m- | -m- | -m- | -m- | -m- | -m- | -m- | -m- |
| n- | n- | n- | n- | n- | n- | n- | n- |
| -n- | -n- | -n- | -n- | -n- | -n-/-ṉ- | -n- | -n- |
| nʸ- | n- | | n- | nʸ- | ñ- | nʸ- | |
| -nʸ- | -n- | | -n- | -nʸ- | -ṇ- | -nʸ- | |
| -ŋ- | -n- | | -n- | -ŋ- | -ṇ- | -ŋ- | -ŋ- |

| Proto-Nostratic | Proto-IE | Proto-Kartvelian | Proto-Afrasian | Proto-Uralic | Proto-Dravidian | Proto-Altaic | Proto-Eskimo |
|---|---|---|---|---|---|---|---|
| l- | l- | l- | l- | l- | l- | l- | |
| -l- | -l- | -l- | -l- | -l- | -l- | -l- | -l- |
| -lʸ- | -l- | -l- | -l- | -lʸ- | ḷ- | -lʸ- | |
| r- | -r- | -r- | -r- | r- | | | |
| -r- | -r- | -r- | -r- | -r- | -r-/-ṟ- | -r- | -ʀ- |
| -rʸ- | -r- | -r- | -r- | -rʸ- | -ṛ- | -rʸ- | |

| Proto-Nostratic | Proto-IE | Proto-Kartvelian | Proto-Afrasian | Proto-Uralic | Proto-Dravidian | Proto-Altaic | Proto-Eskimo |
|---|---|---|---|---|---|---|---|
| i | i e | i | i | i | i | i | i |
| ə | e a ə | e i | i u | e | e | e | ə |
| u | u o | u | u | u | u | u | u |
| e | e | e | e | e | e | e | i |
| a | a o ə | a | a | a ä | a | a | a |
| o | o | o | o | o | o | o | u |
| iy | ĭy ey ī ē ĭ | iy i | iy | iy i | iy ī | | iy |
| əy | ey ay ĭy ĭ | ey i | iy uy | ey | ey ē | | əy |
| uy | ĭy ī ĭ | uy i | uy | uy | uy ū | | uy |
| ey | ey ĭy ē ĭ | ey i | ey | ey e | ey ē | | iy |
| ay | ay oy ĭy ĭ | ay i | ay | ay äy | ay ā | | ay |
| oy | oy ĭy ĭ | oy i | oy | oy | oy ō | | uy |
| iw | ū ŭw ŭ | iw u | iw | iw | iv ī | | iv |
| əw | ew aw ŭw ŭ | ew u | iw uw | ew | ev ē | | əv |
| uw | ū ō ŭw ow ŭ | uw u | uw | uw u | uv ū | | uv |
| ew | ew ŭw ŭ | ew u | ew | ew | ev ē | | iv |
| aw | ow ŭw ŭ | aw u | aw | aw äw | av ā | | av |
| ow | ō ow ŭw ŭ | ow u | ow | ow o | ov ō | | uv |

Note:  The Proto-Altaic vowels are according to Starostin—Dybo—Mudrak's reconstruction.  The developments of the sequences *iy, *əy, *uy, *ey, *ay, *oy, *iw, *əw, *uw, *ew, *aw, *ow in Proto-Altaic are unclear.

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